

May 13, 1930.

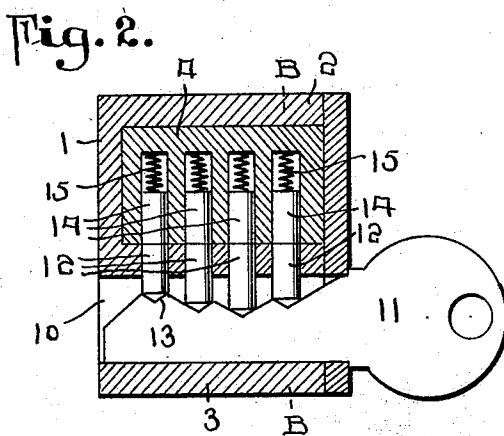
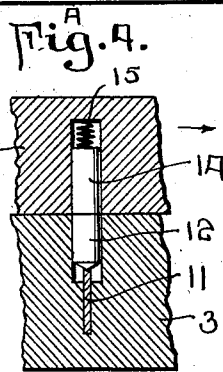
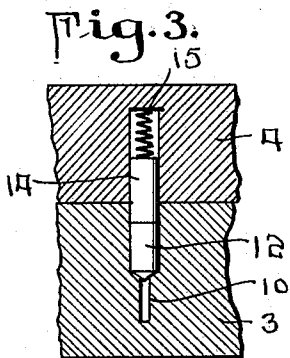
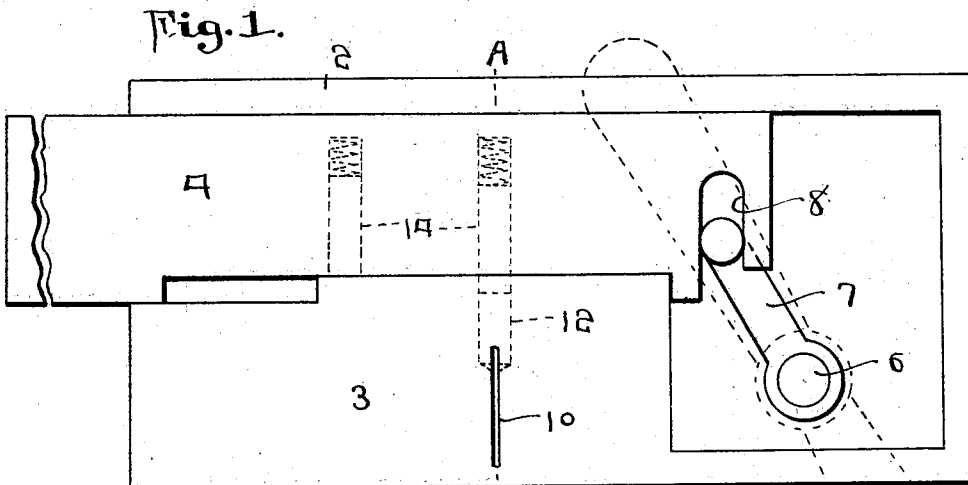
A. RÉBORI

1,758,620

LOCK

Filed June 15, 1925

2 Sheets-Sheet 1



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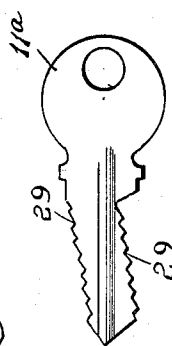
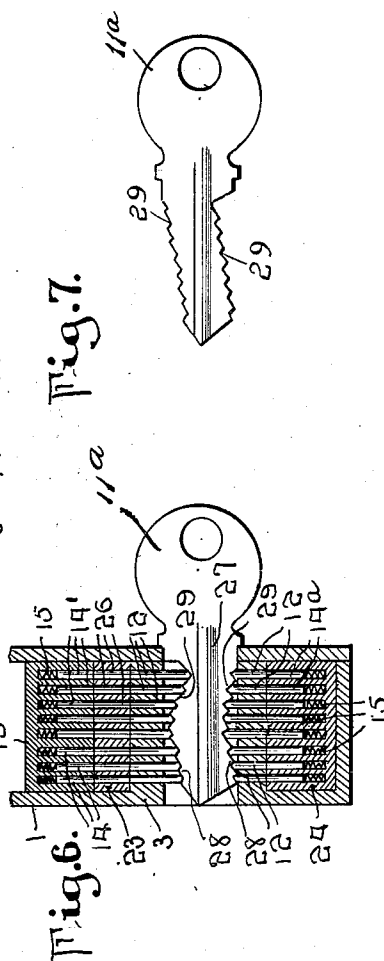
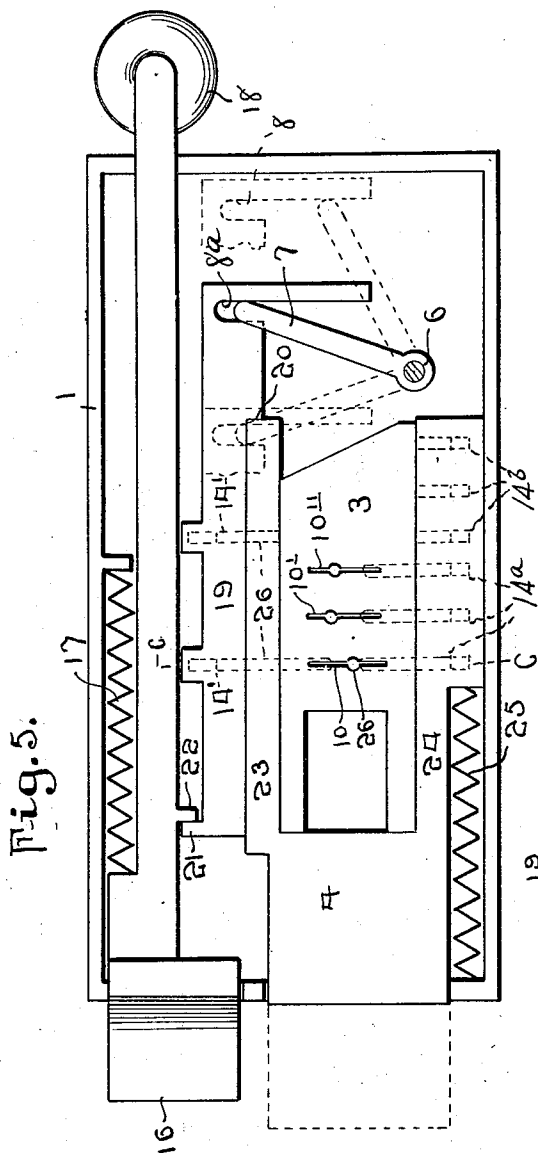
A. RÉBORI

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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LOCK

Application filed June 15, 1925, Serial No. 37,319, and in Argentina April 30, 1925.

The present invention relates to improvements in locks, and has for its object to provide a device of this character which is more efficient and practical than those at present in use.

proved lock, a part of the casing being removed to more clearly show the internal parts.

Fig. 2 is a section on the line A—A of Fig. 1.

Fig. 3 is a detail section on the line B—B of Fig. 2 showing the key removed.

Fig. 4 is a detail section similar to Fig. 3 showing the key inserted.

Fig. 5 is a view of a modification of the invention, a part of the lock casing being removed.

Fig. 6 is a section on line C—C of Fig. 5.

Fig. 7 is an elevation of a modified type of key employed in the form of lock illustrated in Figs. 5 and 6.

Referring to the drawing in detail the numeral 1 indicates the casing of the lock including a top wall 2 and internal raised portion 3 constituting a guide and coacting with the top wall 2 to confine and guide the sliding and non-rotatable bolt 4.

The bolt is adapted, when projected, to extend from one end of the casing 1, while the guide 3 terminates inwardly of the opposite extremity of the latter to provide adequate space for a shaft 6 carrying a handle 5 at one end located externally of the casing and provided, within the casing, with a crank arm 7 movable in a transverse slot 8 formed in the adjacent extremity of the bolt 4, whereby incident to oscillation of the shaft 6 the bolt 4 is reciprocated back and forth in the casing from projected to retracted positions. The movement of the bolt is limited in both directions by stop shoulders 9 formed thereon and coacting with the guide 3.

The guide 3 which preferably constitutes an integral part of the lock casing is provided with a key way 10 to accommodate the key 11 which is inserted longitudinally therein.

A group of pin tumblers each consisting of aligned and abutting sections 12 and 14 is arranged in a row transversely of the bolt 4, the tumblers being partially received within the bolt and partially within the guide 3. The lower extremities of the tumblers are tapered as at 13, and upon insertion of the appropriate key 11 the tumblers displaced

Known types of locks employ a flat type of key with or without guiding grooves which is adapted for insertion in a cylinder provided with sections of pin tumblers which, when engaging in the grooves of the key, are so disposed as to permit rotation of the cylinder, but which, upon the removal of the key, is displaced so as to lock the cylinder against rotation. In such types of locks the key is ordinarily utilized to rotate the cylinder and to actuate the bolt or other part of the lock.

The present invention relates to improvements in locks of this general type, and consists essentially in that the tumblers serve only to lock or release the bolt in its sliding movement, the movement of the bolt being effected by means of a handle. By this arrangement it is possible to obtain a more efficient lock than heretofore, and moreover the arrangement is such as to permit the internal parts of the lock being so concealed and protected as to prevent unauthorized tampering therewith. By the use of means other than the key for actuating the bolt, it is possible to manufacture a key of considerably thinner material than that heretofore employed for locks of the type in which the key is employed for releasing the bolt.

A further object of the invention is the provision of a lock permitting the introduction of the key from either side so that in the event the lock is applied to the door of an apartment, for instance, the lock bolt may be retracted by means of the key either from the interior or exterior of the apartment. A further object is the provision of a lock provided with a plurality of independent groups or sets of pin tumblers necessitating the use of a corresponding number of keys in order to effect the release and consequent retraction of the bolt.

In the accompanying drawing, wherein an approved embodiment of the invention is illustrated, Fig. 1 is an elevation of the im-

against the tension of the springs 15 assume the position shown in Figs. 2 and 4 in which the line of division between the sections of the individual tumblers is flush with the surface of contact between the guide 3 and the bolt 4, and the latter is thus free to be actuated by the crank arm 7. As will be understood, the several pin tumblers are composed of sections of varying length so as to require the use of a key of such irregular shape as to prevent an unauthorized person from tampering with the lock and effecting unauthorized opening thereof.

According to the invention the bolt 4 is provided with duplicate groups of tumbler sections 14 arranged a distance apart corresponding to the extent of movement of the bolt whereby in either of the two extreme positions of the latter one or the other group of the tumbler sections is in position to coact with the single group of tumbler sections 12 in the guide 3 whereby to lock the bolt in either projected or retracted positions.

In the modification of the invention illustrated in Figs. 5-7 inclusive the lock is provided, in addition to the sliding bolt 4, with an auxiliary sliding bolt or latch member 16 which is normally retained in projected position by a spring 17 and may be manually withdrawn by means of a handle 18 located externally of the casing 1.

According to this embodiment of the invention the inner extremity of the bolt 4 is provided with bifurcations 23 and 24 which embrace the guide 3, the spring 25 being interposed between the casing 1 and a shoulder on the bifurcation 24 whereby the bolt 4 is normally retained in retracted position.

A member 19 is mounted for sliding movement between the shank of the auxiliary bolt 16 and the bifurcation 3 of the bolt 4. One extremity of the member 19 is slotted as at 8^a to accommodate the crank arm 7 of the handle shaft 6 whereby reciprocatory movement is imparted to the member 19, through which latter movement is imparted to both of the bolts 4 and 16 as will be hereinafter more fully described.

Along its top edge the bolt actuating member 19 is provided with a stop lug 21 engageable with the stop lug 22 on the shank of the auxiliary bolt 16 when the crank arm 7 is moved to its intermediate position, as shown in full lines in Fig. 5. Upon rotation of the handle shaft 6 in a clockwise direction the arm 7 shifts the member 19 to the position shown in dotted lines at the right of Fig. 5, and by engagement of the stop lug 21 with the lug 22 the auxiliary bolt 16 is retracted against the tension of the spring 17.

On its under side the bolt actuating member 19 is provided with a stop shoulder 20 which is so disposed with respect to the stop lug 21 that when the crank arm 7 occupies the position shown in full lines in Fig. 5 said

shoulder is brought into engagement with the terminal of the bifurcation 23, and upon continued movement of the arm 7 to the dotted line position shown at the left in Fig. 5 the main bolt 4 is projected to the dotted line position, the stop lug 21 moving to the left out of engagement with the lug 22.

The parts so far above described in connection with the form of the invention shown in Figs. 5 and 6 constitute the actuating means for the main and auxiliary bolts 4 and 16. According to this embodiment of the invention the guide 3 is provided with three or more key ways 10, 10' and 10'' which, as shown in Fig. 6, extend from one side to the other of the lock casing and arranged in a line with the corresponding number of groups of pin tumbler sections 12 arranged thereunder. Groups of tumbler sections 14^a are located in the bifurcation 24 in the main bolt 4 and are so disposed with respect to the tumbler sections 12 that when the bolt 4 is retracted and the keys withdrawn from the key ways 10, 10' and 10'', the several tumbler sections 12 and 12^a act to lock the bolt in retracted position.

Additional groups of tumbler sections 14^b are located in the bifurcation 24 and are so disposed that when the bolt 4 is projected the tumbler sections of the groups 12^b lie in vertical line with the several key ways, and coacting with the tumbler sections 12 lock the bolt in projected position.

In order to lock the bolt actuating member 19 against operation, an additional group of tumbler pin sections 12 is located in vertical line with the key way 10 which cooperate with the intermediate tumbler sections 26 located in the bifurcation 23, the latter tumbler sections being engaged with the spring actuated sections 14' mounted in the bolt actuating member 19. The member 19 and bifurcation 23 are provided with duplicate groups of tumbler sections 14' and 26 which in the two extreme positions of the main bolt 4 are moved into vertical line with the key way 10, and coacting with the pin sections 12 lock the bolt 4 with the guide 3, as well as the bolt actuating member 19.

The type of key employed in connection with the key way 10 is provided along both edges with recesses 29 adapted for cooperation with the two groups of pin sections located above and below the key way 10. The key is of such form that the tumbler sections and receiving recess therein located on opposite sides of the longitudinal center of that portion of the key which enters the lock are symmetrically disposed so that the key may be readily inserted through either end of the key way 10 at opposite sides of the lock, and in order to assure proper positioning of the key in said way the guide rib 27 is preferably formed upon the key.

The key as shown in Fig. 6 is provided

with recesses arranged in oppositely inclined rows or steps, but the form of the key may be changed as desired and may be of the form suggested in Fig. 7.

5 Under ordinary conditions when the bolt 4 is retracted the auxiliary bolt 16 acts as a catch and is retracted at will by turning the handle shaft 6 in a clockwise direction. When it is desired to project the bolt 4, the shaft 6 is turned in a counter clockwise direction, the shoulder 20 acting on the bifurcation 10 to project the main bolt 4, the lower groups of tumbler sections 12 coacting with the tumbler sections of the group 14^b to lock the bolt 15 in projected position. Simultaneously the tumbler sections 12 above the key way 10 coacting with the sections 14' and 26 lock the actuating member 19 against movement, and the main bolt 4 can only be restored to retracted position by inserting the appropriate key in each of the key ways 10, 10' and 10'' whereupon the main bolt is automatically retracted by the spring 25.

Having thus described and ascertained the nature of the present invention and the manner to realize it, I declare that what I claim as my invention and exclusive right is:

1. In a lock, a casing, a guide member therein, a bolt member engaged with said guide member, a longitudinally movable bolt actuating member engaged with the bolt member, and sectional pin tumblers, the sections of the tumblers being located in the actuating, bolt and guide members and operable to lock both the actuating member and bolt member against movement with respect to the guide member.

2. In a lock, a casing, a guide member therein, a bolt member engaged with said guide member, a longitudinally movable bolt actuating member engaged with the bolt member, and sectional pin tumblers, the sections of the tumblers being located in the actuating, bolt and guide members and operable to lock both the actuating member and bolt member against movement with respect to the guide member, and additional sectional pin tumblers located partially within the guide member and partially within the bolt member.

3. In a lock, a casing, a guide member therein, a bolt member engaged with said guide member, a longitudinally movable bolt actuating member engaged with the bolt member, and sectional pin tumblers, the sections of the tumblers being located in the actuating, bolt and guide members and operable to lock both the actuating member and bolt member against movement with respect to the guide member, and an auxiliary bolt member also actuated by said actuating member.

4. In a lock, a casing, a guide therein, a bolt having a bifurcated extremity slidably embracing the guide, the guide having a key

way therein, and opposed groups of sectional pin tumblers in line with said key way and located partially within the guide and the opposite bifurcations of the bolt.

5. In a lock, a casing, a guide member therein, a bolt member having a bifurcated extremity slidably embracing the guide, the guide having a key way therein, a bolt actuating member overlying the bifurcated extremity of the bolt member, and sectional pin tumblers disposed in line with the key way, the sections of the tumblers being located in the actuating, bolt and guide members.

6. In a lock, a casing, a guide member therein, a bolt member having a bifurcated extremity slidably embracing the guide, the guide having a key way therein, a longitudinally movable bolt actuating member overlying the bifurcated extremity of the bolt member, and sectional pin tumblers disposed in line with the key way, the sections of the tumblers being located in the actuating, bolt and guide members.

In testimony whereof I affix my signature.

ATILIO RÉBORI.

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